



# **Optimum Nutrition for the Mind: Nutritional Interventions, Habits, and Therapies to Fix Our Brains**

**with Patrick Holford**

## **[The MindHealth360 Show](#)**

### **Episode Transcript**

Host: Kirkland Newman

Guest: Patrick Holford

## The MindHealth360 Show - Patrick Holford

Patrick Holford (00:00:03):

IQ is going down. Brain size is probably going down. It seemed to reach a peak about 10,000 years at 1.45 kgs. We're now down to about 1.35 kgs. The very thing that makes us human, which is our compassion, and our empathy and our intelligence and so on, is actually eroding. What we are seeing is more dementia, more depression, more anxiety, more schizophrenia, more sleeping problems, and so on. We've got this perfect storm for mental illness. People don't realize that what you put in your mouth has a phenomenal effect on how you think and how you feel.

Kirkland Newman (00:00:45):

Welcome to The MindHealth360 Show. I'm Kirkland Newman, and if you or your loved ones suffer from mental health issues, such as depression, anxiety, insomnia, poor memory, poor attention, mood swings, exhaustion, stress, etc, I interview the leading integrative mental health experts from around the world to help you understand the root causes of these symptoms, many of which may surprise you, and suggest solutions to help you heal over the long-term. If you want further information, please go to [www.mindhealth360.com](http://www.mindhealth360.com), or find us on social media.

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Kirkland Newman (00:01:20):

So, Patrick Holford, I'm so excited to welcome you to the MindHealth360 Show. You are one of the most incredible pioneers of a more nutritional approach to mental health. I think, before anyone, you've been out here saying things which were really ahead of the times, and which now are becoming a lot more mainstream in terms of the research, catching up with what you've been saying. You've had an incredible impact on nutritional medicine, on mental health and all sorts of things. You've had a huge following and a huge impact around the world. I'm really honoured to have you here. I'll read a little bit about your bio..

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..but I'll try and put a lot more in the show notes because it's quite long. You're a leading spokesman on nutrition in the media, specialising in the field of mental health. You also cover so many other topics like arthritis and colds and flu. Your latest book *Flu Fighters* is fantastic and a must read for anyone worried about COVID. I have to say from a personal perspective, you really helped me a tremendous amount when I had my postpartum depression. There were two books that were absolutely essential reading for me and which really changed the course of my own issues. I was put on antidepressants and sleeping pills, which had a lot of side effects and weren't really working for me. I came across two of your books. One was *Optimum Nutrition for the Mind*.

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The other one was *How To Quit Without Feeling Shit*. One of them really helped me understand that there was a completely different approach to healing mental health issues, including postpartum depression. The other one helped me get off my antidepressants because I had a terrible time getting off antidepressants (Mirtazapine) and my sleeping pills (Zopiclone). I could not for the life of me get off them. It was an absolute dark night of the soul and your book was a lifesaver. You have six books here about mental health.

Kirkland Newman (00:03:23):

One of them is your latest, *The Chemistry of Connection, The Alzheimer's Prevention Plan: 10 proven ways to stop memory decline and reduce the risk of Alzheimer's, The Feelgood Factor: 10 proven ways to boost your mood, and motivate yourself, The Stress Cure: How to resolve stress, build resilience and boost your energy*. All of us know how important and damaging stress can be for our mental health. One which is the catch-all for all of this is *Optimum Nutrition to the Mind*, which is absolutely life changing. For anyone who is trying to get off a substance or behaviour - *How To Quit Without Feeling Shit*, absolutely fantastic books.

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All of this is a little overwhelming. We're going to try and keep this under an hour. I know you have a wealth of information. In terms of the key points to tell people who are really struggling with things like depression, anxiety, addiction, insomnia, poor memory, poor cognition, and attention, what are the key facts that you would want people to take away from this?

Patrick Holford (00:04:32):

I'm going to start in a slightly different direction. I would say that I have a model of health which I built at the Institute for Optimum Nutrition, which on a physical-chemical level basically says there are two things going on. There's your genes, which are the instructions that tell the environment, in other words everything you eat, drink, and breathe, how to organise itself. Say if you've got arthritis,

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or Alzheimer's or any disease, you could say, your total environmental load, everything you eat, drink, and breathe, has exceeded your capacity to adapt, because that's what we really have is this adaptive capacity. So you either change your genes which you can't do, or you change your environment - what you put in your mouth, which you can do. What we've now learned is that the environment changes your genes. So a woman who has the bracket gene has a 50% chance of getting breast cancer, but that

means half do and half don't. Why? The environment can turn genes up or down. Now, psychologically, if we look at it a different way, we can say..

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..what are your psychological genes? They're really your mind frame. In other words, the way you see the world. These are patterns that we inherit from our parents. So if you've got a pattern that says 'I'm not good enough' that old chestnut will keep popping up. So you've got your mind frame, that's like your psychological genes, and then you've got your environment. That's everything that that you see here, think, smell. It's all your sensory inputs. It's a bit like saying if you're having a hard time with your boyfriend, you've got two choices, either get a new prescription for your glasses, or get a new boyfriend. This is sort of the way it goes. In essence, mental health issues, for the large part..

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..result because on the one hand, you don't have the right chemical environment, you're lacking in a nutrient. We know that a lack of omega-3, for example, increases the risk of depression and schizophrenia. We know that a lack of certain B vitamins, especially b12, increases the risk of dementia. We also know that some people have certain genes that predispose them towards certain illnesses. For example, there's one called high histamine type. About 10 percent of schizophrenics have a high histamine type, this is genetic. Histamine is dampened down by vitamin C.

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So, they need more vitamin C. They have a faster metabolism, so they run out of nutrients more quickly. So, genes, environment. Psychologically, those negative behaviour patterns that we've got embedded in our psyche, and then what's actually happening. So very often, what happens is somebody hits a period of stress in their life, and that triggers the beginning of whatever.. depression.

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This is also a label that we put on things, in the sense that when someone says, 'I'm feeling anxious', what are they actually feeling? Are they feeling like butterflies in the stomach? Are they feeling that their muscles are tightening? What's actually happening? I remember reading a story of a Sensei, a martial arts master, and the student was about to spar with him. He was feeling very nervous and anxious, because this guy was big and strong. He said, 'How are you actually feeling?' and she says, 'I've got butterflies in my stomach.' He said, 'Now you need to learn how to get the butterflies in formation.' I was many years ago in India in an ashram and asked to give a talk.

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## The MindHealth360 Show - Patrick Holford

There were about 3000 people there. I was waiting in the wings feeling very nervous. And this Swami lent over to me and said, 'Fear is just suppressed excitement.' Depression is often anger without enthusiasm. Don't get sad, get mad. So we do label ourselves. That's a terribly important thing. A lot of this work in mental health has actually been starting from a different point. One of the reasons I got started in this as I was studying, I've always been interested in what life is all about. It's the big questions, and of course, ultimately, the transcendental questions as well, which is more what I cover in *The Chemistry of Connection*.

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I was studying schizophrenia at York University. I knew the drugs didn't work, they were just chemical straitjackets. I thought I would become a psychotherapist, but psychotherapy for the large part also doesn't work in schizophrenia. Then I came across this double blind controlled placebo trial which had given newly diagnosed schizophrenics a large amount of a B vitamin, niacin, or a placebo. The results were amazing. Basically, these people stopped hallucinating. And that was the work of Dr. Abram Hoffa. I jumped on a plane and went to meet him and said 'How many people have you treated with this mega-vitamin approach?

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He said, 'About 3000' and I said, 'What's your success rate?' and he said, '85% cure'. I said, 'I've never actually met a cured schizophrenic, define your term.' He said, 'Free of symptoms, able to socialize with family and friends and being in tax.' I'd never met a schizophrenic paying income tax. So I then said, 'I want to meet some of these formerly schizophrenic people', which I did. They were clearly completely sane. I then said, 'I have one more question, which is, can I become your student?' What actually happened was there was a psychiatrist in London called Humphry Osmond who had a theory - by the way, this scale of depression at one end to going crazy at the other..

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..it's just a scale in the same way that with kids we might label them with ADHD, and then it can go all the way in the autistic spectrum and so on. So it's all relevant to all of us. That's the point. What happened was, Humphry Osmond thought that schizophrenics were possibly producing a chemical made from adrenaline that was making them hallucinate. He teamed up with Abram Hoffer, who was the head of psychiatric research for a province in Canada. They started to really observe schizophrenics and they developed what's called the Hoffer-Osmond diagnostic scale (HOD) of dis-perceptions.

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If you actually ask a so-called schizophrenic what happens, they say, 'I hear things, I see things, I can see a halo around you. Sometimes my body feels numb, like it's dead.' There are all sorts of dis-perceptions. The same way that if you have an anorexic draw their body shape, they will draw something much bigger than it actually is. So dis-perception means the brain is not processing what's coming in through the senses correctly. Then they notice, because interestingly there are two cacti, one in North America called Peyote and one in South America called San Pedro, which contain a hallucinogen.

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The Native Americans in the north would take Peyote for insight and visions. They noticed that the symptoms that they would experience were very similar to the schizophrenics in terms of visual and auditory hallucinations, and so on. They actually found that there was a chemical that is always in the urine of somebody who takes Peyote, which we now know is mescaline. It's in 73% of the urine of schizophrenics, but not in normal people. They then deduced that the schizophrenics were producing an endogenous hallucinogen, and the antidote would be a B vitamin. Later, we learn B vitamins.

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So they then designed the first ever double blind controlled trial in the history of psychiatry, giving a large amount of niacin B3, and it stopped the hallucinations. That's kind of how I got into it. And then I started to get interested in intelligence, thinking that we need more of it. In fact, in a recent post on vaccines, somebody posted 'shame there isn't a vaccine against stupidity', because it's kind of what we need more than anything. At that time, I just started the Institute for Optimum Nutrition. I have a lovely student called Guillem Roberts who ran a secondary school in Wales. We designed a study, we didn't really know enough about omega-3 then..

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..but we gave the school kids high dose vitamins and minerals versus placebo. We hired the services of a professor, David Benton, who thought we were nuts. There's no way taking vitamins is going to change your IQ. In essence, what happened, and this was published in The Lancet, and filmed by BBC Horizon, is that the kids on the vitamins had a 10 point increase in their IQ, and the ones on the placebo had a three point and a seven point difference. If you have a five point difference, it gets half of all children classified as special educational needs back into the normal category. By the way, that seven point difference is about the drop that we've had in the last generation. Please understand something very important here, which is that IQ is going down.

(00:14:30):

Brain size is probably going down. It seemed to reach a peak about 10,000 years at 1.45 kgs. We're now down to about 1.35 kgs. The very thing that makes us human which is our compassion and our empathy and our intelligence and so on, is actually eroding. So what we are seeing is more dementia, more depression, more anxiety, more schizophrenia, more sleeping problems, and so on. I think that humanity as a species is in a very, very dangerous place. With our population growing, we're actually running out of the essential nutrients that are required for the mind. On top of that..

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..I'm sure you've watched Social Dilemma, we have this added factor which is a product of our time, which is that everyone's learned how to stimulate your reward system in the brain and dopamine and all the rest of them. We've kind of got this perfect storm for mental illness. And people don't realize that what you put in your mouth has a phenomenal effect on how you think and how you feel. That's kind of how I got into this rich field.

Kirkland Newman (00: 15:51)

That's fascinating. I have so many questions around that one. One of them is what if you give B3 to people who were on Ayahuasca or on San Pedro, will that stop their hallucinations? Or does it take a while to work? 'm sure that's not a study that has been done, but..

Patrick Holford (00:16:09):

Not yet. We'll add it to the list. I came out of the Festival Hall the other day, and this guy taps me on the shoulder and says, 'Do you remember me?' I said, 'Yeah, I remember you.' He said, 'I just want to thank you. You changed my life.' He was sectioned in a mental health institution with schizophrenia, and his dad approached me and said, 'What can I do?' I told him to give him two grams, 2000 milligrams of niacin. The RDA is 18 milligrams, and it stopped his hallucinations. So niacin is key. B Vitamins are key.

Kirkland Newman (00:16:51):

I have a couple of questions. First of all, why do you think our brains are shrinking? Why do you think we're becoming more stupid? Is it because - you mentioned technology, but presumably, a lot of it is about our environment and nutrition. So that's one thing. And then the other thing is what are the things that we can do about it? What are the key factors that we can..? I know you mentioned a lot about homocysteine and methylation and its importance for mental health. So maybe talk to us about both of those things.

Patrick Holford (00:17:22):

It's the right way to look, because rather than saying that for depression it's omega-3, and for schizophrenia it's B3, etc., any of these conditions can arise from fundamental dysfunction in underlying processes. The three most important processes in relation to the mind; methylation, which has to do with B vitamins, and I'll explain, lipidation, which has to do with fats, omega three as an example, vitamin D is another and also ketogenic diets, high fat diets is another, and glycation, which has to do with glucose, blood sugar, and so on.

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So, the first thing to understand is that what makes us human is we've got these large brains, tons of brain cells called neurons, which to put it into context, in a new-born baby, they're making up to 1 million connections between brain cells a second, right? So, when a baby lamb is born, it's got to stand up within minutes, and function, right? When a baby's born, they can't really do anything for a couple of

years. It's all about brain development and brain wiring. When you look at a neuron, it has a very complex and important membrane or skin. It's a bit more than a skin. It's made out of omega-3's, specifically DHA..

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..which is a type of omega-3 that is not in chia or flax. So you do not get any direct DHA from plants. You really get it from fish, and the DHA attaches to things called phospholipids which are in fish and eggs. The attachment is done by a process called methylation which depends on B vitamins. especially B6, folates and B12.

Kirkland Newman (00:19:21):

Folate being B9, right?

Patrick Holford (00:19:23):

Yes, we really call it B9, but think of foliage, folate, the stuff in greens. B12, on the other hand, is in no plant food at all. B6 is in both animal food and plant food and mainly protein based so you have more in a nut or a bean than you would in a leaf. When I read Optimum Nutrition for the Mind, the first half is for anyone with a brain. it's what they should have taught you about your brain at school. The second half has a chapter on dementia, a chapter on anxiety..

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..insomnia, schizophrenia, and ADHD, but it's just a chapter. In relation to Alzheimer's, to cut to the chase of it.. Again, the three major driving factors in Alzheimer's, the major ones, are methylation (lack B vitamins), lipidation (lack of omega-3), and blood sugar problems. What happens in Alzheimer's is.. When Professor David Smith at Oxford University, did a study where he gave people with pre dementia or pre Alzheimer's, high doses of B 2, folate and B6 versus placebo. He could show in one year that the brain stopped shrinking by 53 percent, or 53% less shrinkage.

Kirkland Newman (00:20:51):

When you say high doses, what do you mean by that?

Patrick Holford (00:20:53):



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The most relevant thing here is actually vitamin B12. As you get older, you absorb less. So the RDA, which stands for the ridiculous dietary arbitrary, is two micrograms. It probably should be 10 micrograms, but he gave 500 micrograms. Not because you need it, but if you're not absorbing b12 so well, which is incredibly common post 50, then you need much more. He actually mentioned something in the blood, which I would do for anyone with any mental health problem, which is a blood substance called homocysteine. If you can't remember it..

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..which, in fact, if you have high homocysteine is, it's the major driver of memory problems, just think of gay chapel, right? I might not be very PC, but homocysteine and then you might at least remember what the test is. if your homocysteine is above 10, let's say, you've got accelerated brain shrinkage. Now, here's the interesting thing. He didn't give omega three, but he had blood samples of all the people in the study. He then reanalysed the data to look at those in the top third for omega three in their blood, and those in the bottom third. He found that if someone had both sufficient omega three, and given the B vitamins, their brain shrank by 73 percent less.

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The level of brain shrinkage at that point is equivalent to the shrinkage you normally get in people over 70 with no loss in cognitive function at all. Just to finish this, no further memory loss. In addition to that, 30 percent we're no longer clinically rated as having dementia.

Kirkland Newman (00:22:42):

That's incredible. Just to recap, b6, folate and b12 are the key ones. So, if you just take those three, that would be enough, or would you recommend taking a whole B complex?

Patrick Holford (00:22:56):

This is where it all gets sort of personal. I don't know whether you or anybody I'm working with has a methylation problem or not.

Kirkland Newman (00:23:05):

Unless you do genetic testing?

Patrick Holford (00:23:07):

You don't need genetic testing, you measure the homocysteine in the blood. The problem with genetic testing, as useful as it is, is that some of us are better at methylating than others, which means some of the enzymes needed (they run on these B vitamins) are not quite so well constructed. If you inherit certain genes, you can have a gene test and it might say that you're not great at methylation, which would mean you probably have a higher risk of Alzheimer's. Actually, whether or not you're doing methylation is simply determined by your homocysteine level. So, if you said to me..

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'How do I know I'm getting enough nutrients in relation to B vitamins?', I say, 'Don't ask me, ask your body, measure your homocysteine.' It doesn't matter if it's high. Whether you've got the genetic factors or not, if it's high, you don't have enough B vitamins for you. It's a lovely example of genes interacting with the environment. What we know in studies is that if you give people who have the genetic weaknesses for methylation, B vitamins, those weaknesses are effectively overruled. The interesting thing about David Smith's study as a principle is that if somebody failed to get enough omega-3, so the lowest third..

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..that was given the B vitamins, the B vitamins didn't work. So when you go back to the neurons, you've got to have the vitamins to drive the fixing of the omega-3 to the phospholipids. If you've got no omega three, the B vitamins won't work. If you have no B vitamins the omega-3 won't work. The first thing to point out there is there's no question in my mind that we didn't drop out of the trees, stand upright and go hunting on the Savannas. I think that's complete rubbish. I actually run safaris. The last thing you ever do, if you want to catch an animal, is to stand up. All the best hunters are fantastic crawlers and fantastic sprinters.

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We are neither. The evidence is immensely clear. There's a very good book on this called The Waterside Ape. What happened is that when we split from chimpanzees and gorillas and bonobos, about six and a half million years ago, we started to explore wetlands, swamp lands, the water's edge, and we became upright. We developed our unique sinesses, and our layer of subcutaneous fat, which for many of us is getting a bit too big, and many other attributes, including the wrinkly skin that you get when you're in water, which is very good for catching fish, you have more grip. Because we were a semi-aquatic ape we lived in the water a lot more.

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Consequently, we would have gotten a lot more omega three, B12, selenium and zinc. A classic example of this is that in Wales, where we've built our amazing retreat centre Forest Barn, they found a 46,000 year old, ancient homosapien's remains. I remember seeing this on the BBC. They did the usual talk, saying they would have been hunting on the plains and eating antelope and all the rest of it. The truth is that when they analysed the bones of this ancestor, about a quarter of its diet was seafood. If you assume, and this is an underestimate, that that ancestor was expanding double the calories that we do today..

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..then they will have been eating twice as much food. If they're eating twice as much food and one quarter of it is seafood, then that means to achieve the same intake of DHA, omega-3, B12 and selenium that they would have been getting today, we would need to have literally half of all our calories from seafood. That's a long way around to say that actually, if you look at the evidence, the lowest risk of disease, both of the mind and the body.. By the way, if you get nutrition right for the mind, you've got it right for your body, is two grams a day.

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I take a supplement every day of omega-3, and I eat oily fish three times a week. I have some seeds like chia seeds every day. The combination of those three can get me to two grams. In other words, you cannot get two grams a day just from eating three servings of oily fish. You cannot do it either, well you can if you supplement a lot of omega three, but only your regular omega-3's. That's what appears to be optimal. So, when I've got someone with depression, or stress or whatever it happens to be. The first question I ask is, have they got a methylation problem? Do they need more B vitamins?

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The second question I'm asking is are they getting enough omega-3? The third question I'm asking is do they have a blood sugar problem? Because blood sugar dips, when your blood sugar dips, you produce more adrenaline. So when you're looking at anxiety, insomnia, the first question is, are you over adrenalized. And the three things that get you over adrenalized is - one is a stressful thought. Two is a blood sugar dip. Three is actually a stimulant like caffeine. There is actually a fourth, which is a drop in progesterone, which happens, menopausal. Those are the four ways you can end up hyped up on adrenaline, unable to sleep, reacting stressfully and all that sort of stuff. The book *The Stress Cure* was around that whole thing.

Kirkland Newman (00:28:56):

So you can measure your methylation with your homocysteine marker. How do you measure your fats, and also your glucose? The other question about fats, you talk a lot about omega-3's, but what about phospholipids? So phosphatidylserine, phosphatidylcholine? I know those are quite important as well.

Patrick Holford (00:29:15):

You can measure your omega-3 status. The best measure of blood sugar is called HbA1c, or glycosylated haemoglobin, which is what defines a diabetic. In essence, if 7 percent or more of your red blood cells are sugar damaged, sugar coated, which is what this test measures, you've got diabetes. If you're down below five and a half percent, you're okay. So you can measure that, but to a large extent, as a nutritionist, if I'm sitting down with somebody just from seeing what they eat, I can have an idea whether they're going to have enough omega-3, and whether they're eating a low glycaemic load diet. You can get a pretty good indicator.

Kirkland Newman (00:29:59)

The other question I've got is our blood sugar problems, the cause or the effect of over adrenalized. For instance, when I had my postpartum depression, one of my problems was that I had very high cortisol and high adrenaline, and I was diagnosed with reactive hypoglycaemia. My endocrinologist said, 'you just have reactive hypoglycaemia, that's what's causing your panic attacks.' I was thinking wasn't it the other way round?

Patrick Holford (00:30:24):

Probably. I always think of the three S's, stress, sugar and stimulants. Those are the three things that go together. What happens is, if you lose your blood sugar control, then your blood sugar goes up and up and up. Usually because insulin is no longer working as well as it should. Insulin resistance. So you have to make even more insulin, trying to bring the blood sugar down. Eventually it kicks in, and the blood sugar goes down too much. In other words, what's happening here is partly as a consequence of eating foods that were never designed to eat. Nature never gives you sugar without giving you fibre, which slowly releases the sugar. So when you have a can of Coke, you're talking about 10 teaspoons of sugar.

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Nowhere in nature would you do that. That sends your blood sugar so high that the body really scrambles to bring it down, and then it goes down to low. And when it goes very low, it produces an adrenal reaction. In other words, if you're hungry, you get this release of adrenaline to get you hunting, and then you get anxious and stressed and whatever, and you go hunting for sugar. Eventually you end up, instead of having a nice, even blood sugar, you have ups and downs and ups and downs, ups and downs. So what's caused an effect, and it's sort of probably a little bit of both, because as you lose your blood sugar control, you start to have this reactive hyperglycaemia.

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When your blood sugar is low, you feel tired, and you feel edgy. So you then want something to help you. You have a coffee, or you have something sweet. That's now becoming a habit, because it works. That's going to have a knock on effect to make matters worse. Then you can't sleep, so now you're going to need something to knock you out. That's what sleeping pills and tranquilisers are about. Then you

wake up and you haven't actually dreamed properly, because dreaming is terribly important. So you're more tired. Now you have more sugar, more caffeine, and then you can't wind down the evening. So you go to drink some alcohol..

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..which switches off adrenaline for about an hour. You learn to not have one glass of wine, but two, and then three, and you learn to time it. You basically go to sleep a bit drunk, which has probably 20 small things that you can do that helped to bring you out of the state. It was a bit depressing, because I would meet people who'd come who were in a total mess, or an absolute black hole having panic attacks. Maybe there were circumstances like a bust up of a relationship or they lost their job, whatever it is, but they were in a total mess. Here I am saying 'have some omega three, eat less sugar, or do a simple exercise like heart math.

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That's very, very good. Just little things, then 'God, it's not going to help.' Anyway, a month or two later, I started to get all these letters from people who say, you may remember me, I came to your talk. I was in a total mess. One girl - I said 'What causes your panic attacks?' She said, 'just thinking about having a panic attack.' I said 'Next time you have a panic attack, do this, run a basin of cold water, take a big gulp of air and stick your head underwater and hold your breath for as long as you can. It doesn't have to be strenuous, but just hold your breath for 30 seconds.' That is part of the diving reflex that switches off and adrenal response. That's why people do these free dives. They get really euphoric. It actually switches off that whole reaction. So that's a very fast way to actually stop.

Kirkland Newman (00:34:10):

I wish I'd known that when I was having my panic attacks. What healed me was breath work, which was essentially breathing in, holding my breath, breathing out for twice as long as I breathe in..

Patrick Holford (00:34:20):

Which is more practical if you're in a car.

Kirkland Newman (00:34:23):

If you're in a car and you don't have cold water to stick your head in. The other thing is that it's all about the relationship between O<sub>2</sub> and CO<sub>2</sub>, because panic attacks are not just psychological, they're biochemical.

Patrick Holford (00:34:37):

I had a lady on one of my retreats and she had problems sleeping. Normally, if you're not sleeping, there are two things going on. One is maybe you can't switch off adrenaline. We clip this little thing on people's ears. It's called the inner balance device. You put it in your phone and your phone will show you exactly.. In a way your stress state is worked on the heart rate variability. This is the fantastic work of heart math. What we've learned is there are way more connections between the heart and the limbic brain, the stress brain than the other way around. Doing things like breathing into the heart space now, from the heart space, evoking a very positive regenerative feeling, maybe a memory, special place someone you love, whatever. Teach somebody to get out of beta waves, which is stimulation into alpha..

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..which is what you need to go to sleep. Maybe have a lovely bath with some Epsom salts, you absorb magnesium. Lavender, there are certain things, maybe some meditation, maybe, as you said, some GABA, which is the amino acid that switches off adrenaline. You can't buy it over the counter in the UK, but you can in the US. I always stock up on GABA when I'm in the US. You can actually buy online and that will switch you off the adrenaline enough to go to sleep. Some people are lacking serotonin and melatonin. Because basically something that's a very important principle is every single thing that exists in your body and brain is made from food.

(00:36:15):

So a colleague of mine, Philip Cowen, at Oxford University, did a study where he took 15 women who were not depressed, and gave them a diet with everything in it, except for one amino acid, one protein constituent which has tryptophan. Within eight hours, 10 out of the 15, women started becoming depressed. Because tryptophan is what you make serotonin from and serotonin is important for your mood. From serotonin, you make melatonin and without melatonin, you can't sleep. The form of tryptophan, 5HTP, five hydroxy-tryptophan, is the most potent way to raise serotonin and it will also raise melatonin.

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For someone who has no problem going to sleep, but wakes up at three in the morning, and can't get back to sleep, I give them some five HTP. Anyway, this lady had tried magnesium, tried GABA, tried five HTP, omega-3s, heart math and everything else.

Kirkland Newman (00:37:17):

Which work?

Patrick Holford (00:37:21):

None. I've got so many people writing in saying I did this, this, this and solved my insomnia. The other thing I recommend is a brilliant CD, which nowadays, you can just get a digital download called Silence of Peace, which is music composed by a man called John Levine that takes you out of the stress beta waves into the alpha waves. Very, very good. All these things didn't work. But then on my retreats, we do an exercise from the Hoffman process, which is about these deep trauma experiences. It actually brought up an experience that she'd had as a child when their mother basically had to go to work. She was extremely young, looking after her baby brother..

(00:38:00):

..and feeling extremely unsafe and hiding under a table. She learned that going to sleep is not safe. That was the fundamental. So the point I'm trying to say here is, yes, sometimes B vitamins, 5HTP, omega 3, etc, etc. But you can't divorce the psychological. The point about that as well is that psychotherapists need to learn about nutrition, because if you don't.. If you've got a patient, and we know this in the field of addiction, as John Lawson once said.. If you sit around, and if you've scrambled your brains, and you sit around in a group and talk about it, it won't unscramble your brains.

(00:38:45):

So psychotherapy is brilliant as it is in getting towards the things that may have led you into an addiction. Once you're in an addiction, alcohol or heroin or whatever it happens to be, your brain chemistry has changed.

Kirkland Newman (00:39:03):

This is the problem. This is why we say 360 degrees. You have to look at everything, the psycho spiritual, the biochemical and the lifestyle behavioural. This is why I think people can go for years and years doing therapy, cognitive therapy, and they're not going to move the needle. Until they start to look at the biochemistry and look at whether they're hormone imbalances or nutritional imbalances or toxicity levels or issues around this. I also think, for instance, what you talk a lot about addiction.. In rehabs they're missing a trick because a lot of you know that a lot of them focus on sort of the 12 steps, which is great, and trauma, healing, etc, which is fantastic, but they don't talk enough about nutrition and the biochemistry of addicts, and I think that's why this book is so important, but also all of these books.

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Patrick Holford (00:39:53):

I totally agree with you on that. The point also is as you start to change your nutrition and get more nutrients, you've got more energy. And that's energy for transformation. So if you're if your brain is scrambled and you're exhausted and you can't think straight, then you're not really in a very fit state to benefit from psychotherapy. Several years ago, I was approached by a professor of addiction studies, David Miller, who had been an alcoholic all his life and doing 12 step teaching there, and a man called Dr. Jim Brawley, sadly no longer with us. What happened to David Miller, is that, although he had quit alcohol..

(00:40:40):

..and stayed clean, using the 12 step process, he really felt crap. Somebody led him into exploring amino acids. When he was given amino acids for the first time, he felt normal. And this is also what happened to Bill the founder of AIA. He came across my teacher Abram Hoffer, who gave him niacin and vitamin C. He started to actually feel good. So these guys, David Miller and Jim Brawley, came to me with literally a large suitcase full of research and said, 'we know how to deal with addiction. You know how to write a book, and we'd like to write this down. I hired a barn by the river down in Devon and went down there. It's about the size of the room here.

(00:41:30):

I laid out all this research and organized it on the floor space. The entire floor space was research. I think I did actually sit down and cry. 'How am I going to absorb all this and organize it and get it together?' But then you've just got to get on with it. They went to one treatment centre. They said, 'give us two dozen of your clients.' These were largely people who had been more than once. Alcohol, heroin, cocaine..

Kirkland Newman (00:42:00):

Relapsing.

Patrick Holford (00:42:02):

Tranquilizers, depression, the whole lot. By the way, you got to know that a 5 percent success rate, 5 percent clean at the end of the year is about as good as it gets. They said we don't want to change what you're doing, any psychotherapy, exercise, good food, whatever you're doing, keep doing it. We just want to add one factor. They actually gave them 23 people. They took a blood sample. As I've said, every single neurotransmitter in your brain like serotonin is made from an amino acid. They worked out which neurotransmitters were depleted, because every addictive compound mimics something in your brain in the way that heroin mimics your natural opioids.



Kirkland Newman (00:42:46)

Benzos, your natural GABA.

Patrick Holford (00:42:48):

Your natural GABA. Exactly. Well, basically, when we've heard about serotonin reuptake inhibitor drugs, SSRIs. Cocaine is a dopamine reuptake inhibitor drug. So you get more dopamine effect from cocaine until eventually, the cocaine replaces the dopamine. So you don't have your own natural feel good dopamine, you've got to have cocaine. That's the way addiction works. So they measured the blood. They worked out which neurotransmitters were depleted. They created an intravenous drip of the nutrients, the amino acids that would immediately go to the brain bypass the gut, which is very damaged in heroin addicts and alcoholics, straight to the brain to restore the neurotransmitters. A drip every day for five days. At the end of five days, they gave them a packet of supplements to take for the next month, and then got the hell out of there. The deal was in one year's time, we need you to follow up these 23 people and find out how many are clean or sober? How many do you think it was?

Kirkland Newman (00:43:54):

80 percent?

Patrick Holford (00:43:55):

21 out of 23 were clean and sober. 18 out of 23 had had continuous sobriety, in other words, had never used alcohol or whatever. One of the things they developed in them, much like Abram Hoffer, was a scale of abstinence symptom severity. The big problem is not getting off these things, you can get off them, but you feel terrible, shit. By the way, in the BBC, you can say crap but you can't say shit. When I was doing a radio show on this, they said 'We can't say the name of your book.' And I said, just use the beep button. So they say author on How To Quit Without Feeling \*beep\* and that worked very well. The point is there's the scale of abstinence symptom severity. When you score that you can instantly tell who is going to relapse. You're absolutely right. The whole addiction field is missing a massive trick. Everything else will work better once you've restored brain chemistry. When you've messed up your brain chemistry, you won't get better just by using a well-balanced diet.

Kirkland Newman (00:45:01)

100 percent, because also you don't absorb the stuff because as you say that a lot of addicts have got issues and they have issues with absorption. But if you look at the actual amino acids that correspond to

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the different neurotransmitters, so precursors to serotonin we know is tryptophan, precursor to dopamine is I think tyrosine. The one with the P.. phenylalanine?

Patrick Holford (00:45:27):

Yes, DL-phenylalanine turns into tyrosine, which turns INTO dopamine, which turns into adrenaline and noradrenaline. they're like your uppers, so to speak.

Kirkland Newman (00:45:39):

Then you've got GABA.

Patrick Holford (00:45:43):

GABA switches off adrenaline. So that's in the same territory as alcohol or Valium, or benzos, or non-benzos, as well.

Kirkland Newman (00:45:50):

And the precursor would be glutamine?

Patrick Holford (00:45:52):

Yes, glutamine and taurine is what we need in order to make GABA.

Kirkland Newman (00:45:58):

The danger though, I think, is that the glutamine can go either way. It can become glutamic acid, or it can turn to GABA. How do we know?

Patrick Holford (00:46:08):

The brain is so clever. I remember years ago, when I worked out that five-hydroxytryptophan would be 10 times as effective as tryptophan. I remember going to Professor Henry at one of the London hospitals. He was like the drug doctor for the government. So when someone died of ecstasy, whatever it happened to be, he was the guy who was called into research that and make a comment. I remember him saying to me that ecstasy is not really dangerous. You die of dehydration or overhydration.

(00:46:50)

Leah Betts was so paranoid that she wouldn't drink enough, she actually drank too much. He said, if you want to see deaths, look at antidepressants, because they mess things up. I said, What about 5HTP? Is there a danger in giving 5HTP? He said no. The brain chemistry has so many checks and balances. The point is that our systems are for the very, very large part, well used to GABA, tryptophan, 5HTP, omega-3, vitamin C, all the rest of it. They know about this. You're generally on a very, very safe bet.

(00:47:30):

I know that because I've reached clearly millions of people since the early 80s. I've not had a single letter, not one email, not even from my colleagues treating people, and we now have trained 10,000 nutritional therapists, saying I did what you said, and it made my depression worse, it made my schizophrenia worse, it made my arthritis worse, it made my blood pressure go up.. In other words, not one of what we would call, serious adverse effects, occasionally somebody gets a bit of nausea because they take too many pills..

Kirkland Newman (00:48:03):

In terms of these amino acids, so what do you do if you're a vegetarian or vegan because amino acids are very prevalent in protein, but it's easier to get them in animal protein than it is in plant protein. Some of them for instance, and the fats as well, the omega-3's it's easier. So how would you advise..

Patrick Holford (00:48:27):

My new book, which comes out in December, is Optimum Nutrition for Vegans. It's like the optimum nutrition bible for vegans. So you can be optimally nourished on a purely plant based diet, but as you quite rightly say, you've got to be aware of protein, you've got to be aware of omega-3, you have to supplement some omega-3. Fortunately, you can get algae-derived DHA, so they process the algae to make DHA. That's the critical omega-3. A lot of vegans are lacking, as you said, the phospholipids like choline. There's little in broccoli, a little in almonds and so on. To be honest, I think you have to supplement.

(00:49:15):

In some form less than is a vegan source of choline, less than granules, less than capsules. The vegan society will tell you to supplement. If you're on a purely plant based diet, you have got to supplement. Also, generally with the amino acids, if you're using them for a very specific reason, like depression,

because there are lots of amino acids in protein, they compete for absorption. So, if you want to take one specifically to raise your serotonin to improve your mood, you're better taking it away from food. Then you're taking a natural sort of synthesised amino acid. So it's vegan.

Kirkland Newman (00:50:03):

So you take a capsule of tryptophan, away from any other..

Patrick Holford (00:50:07):

All these extra things, you don't need to do for long because once you've brought your system back into balance, there's no need to have it. I have various sources within the pharma world. Right now what they're very hot on is combining 5HTP with antidepressants, because it makes the antidepressants work better. It turns out the problem with 5HTP - it definitely works, there's no question - but it doesn't work for very long. So you want to sustain and release it. So, for example, if you were to say to me, what do I do if I'm depressed..

(00:50:50):

..I'd say exercise, outdoors. That's vitamin D, and sunlight also stimulates dopamine and serotonin. Eat a diet that stabilizes your blood sugar, that's the low glycaemic load sugar factor. Have oily fish three times a week. Supplement omega-3's, especially if you're plant based. Also, I have a supplement called Mod Food, which has 5HTP. It has tyrosine. It has vitamin D. It has all those B vitamins, and it has one thing I haven't mentioned yet, which is chromium. I'd like to tell you the story about chromium. If you put all of those things together, there's a very, very good chance that that's going to boost your mood. That's what the feel good factor is all about.

Kirkland Newman (00:51:39):

Completely. Vitamin D is essential to creating serotonin as well. Whether you get that from the sun or from fish or from a supplement, it's essential and for your immune system. Chromium would be great to know about but also what about fasting for mental health? Because one of the things I've been looking into is fasting and the ketogenic diet, which is very high fat, low in carbohydrates, which is actually much better for your brain. When you talk about blood sugar and blood sugar control, I find there seems to be a slight contradiction between - you fast and therefore you have a risk that you will get blood sugar issues, because you might get hungry.

(00:52:20):

That will raise your cortisol and your adrenaline and that will create some blood sugar issues. Yet fasting combined with a ketogenic, a high fat, low carb diet can be incredibly good for your brain. So how would you bring those together?

Patrick Holford (00:52:32):

The first thing for people to understand is that there are two five star fuels that the body can run on. Neurons, brain cells, are so tightly packed together, they either have to run on glucose, which is like pure sugar, or ketones, which are made in the liver from fat. So, if you fast you're burning your body fat turning into ketones. Ketones feed the brain. If you give neurons the choice of glucose, or ketones they actually prefer ketones. Both work, and we think that brain cells running on ketones is what makes babies grow their brains so fast. That's why babies are born fat.

(00:53:15):

They've got a supply of fat from which their body can make ketones. It's why breast milk is high in fat. It's a source of ketones. So brain cells prefer ketones, but that doesn't mean the glucose won't work. So that's the interesting thing. The next thing that's interesting is that if you.. It takes most people 48 hours to get into ketosis running on ketones, if you completely avoid all carbs. Now it takes about 24 seconds to get out of ketosis by eating a piece of bread. So the body clearly likes running on glucose. I would say it's almost our default.

(00:54:00):

Not really in any of these books, but in my book, *The Hybrid Diet*, I started to explore that whole area of quitting carbs, having high fat, and running on ketones. Now, I've believed that you basically have to get into running on ketones to get the benefits, but it turned out I was wrong. Ketones are most directly made out of a type of fat called a medium chain triglycerides. Fats are of different lengths - that is, not long, they're not short, they're medium. The best medium chain triglyceride is actually called C8, it's eight carbons long. Coconut oil has very little of this, less than 10 percent.

(00:54:45):

So I've extracted from coconut oil pure C8. I have a bit of that in my coffee in the morning. In this study, what they did was they took people with pre-dementia and gave them two tablespoons of C8 oil. What happened was their brain cells came back to life. In other words, you were looking at people whose brain cells running on glucose are a bit burnt out. When they're given the C8, from which the body can make ketones, their brain cells switch to burning ketones. Their brain cells come back to life. Now, they weren't on a ketogenic diet, they were just given the fuel.

Kirkland Newman (00:55:29):

In addition to their normal carbohydrate diet?

Patrick Holford (00:55:32):

They didn't change their diet. So brain cells, if there's ketones in your blood, brain cells love it. So we know that epilepsy has been treated for over 100 years now with the ketogenic diet. We know keto diets work for Parkinson's, and probably will work for dementia. So what's really being said there, and it relates to when we spoke at the beginning about methylation, B vitamins, lipidation, fats.. We're now in the fat area again. Glycation, sugar. What I think is happening, not for everybody, but a lot of people heading in the dementia direction is that they're energy factories are worn out from running on petrol carbohydrates.

(00:56:17):

They can run on electricity, ketones, right? It's because they're exhausted. So what I'm now doing in my new book, *The Five Day Diet*, is showing people a way that you can actually switch from your glucose engine, which is all worn out, to your ketone engine, which you've probably never unpacked from the basement. It's a little bit like putting your brain in for a service, but you don't have to stay there always. You can come back to hopefully a slower carb. So, that's the essence of all of this. Learn something. Optimum Nutrition for the Mind is for anyone who has a brain. Learn how your brain works.

(00:57:00):

Look at B vitamin methylation, look at fats, omega-3, vitamin D, possibly ketogenic diets. Look at your whole blood sugar control. There's a flip side of that, which if we have more time to talk about, which is antioxidants, and vitamin C. So we know that schizophrenics need more vitamin C to have normal blood levels of vitamin C. Vitamin C helps the mind to work. If you're making energy from glucose or ketones, you're making oxidants exhaust fumes. That's what the antioxidants are. If you sort out your antioxidants, and you sort out your brain fats, and you sort out your methylation and your B vitamins, and you have a nice stable blood sugar, you're not going to have a mental health problem.

Kirkland Newman (00:57:43):

That covers the biochemistry piece. Also, if you deal with any sort of childhood trauma or the psychotherapy, or if you do those in combination, you're definitely not going to have a mental health problem.

Patrick Holford (00:57:58):

Generally, what happens is that if you get the nutrition right, you get this big increase in energy. You become smarter. Now you will naturally start to explore some of those other factors that may be holding you up. You now have the energy to look at your life and look at what's working and what isn't working..

Kirkland Newman (00:58:22):

..and have the strength to make changes if you need to change. I think that's true. A lot of people say, 'Well, I know I need to change this, but I don't have the energy, I'm exhausted, or I'm too depressed..' so it's a vicious cycle.

Patrick Holford (00:58:35):

That's why I wrote the book, *The Chemistry of Connection*, which has got everything I couldn't put in a nutrition book. All of this is happening in the, in the ever changing relative world, you know, of Trump versus Biden and COVID and life and death and rich and poor, and married and divorced, and all that sort of stuff. It's all happening in this world. Our highest intelligence is that ability that we all have, which is to be conscious, and to observe and to witness all this drama is going on, all this noise that is going on. We have two desires in life. One is to be in life. That's also our sexual.. I mean sex is about procreation and new life. Our enthusiasm, our drive, our attraction and all that.

Kirkland Newman (00:59:30):

Erotic energy.

Patrick Holford (00:59:31):

Exactly. Then we have this desire for transcendence, this desire for that thing that we all have, which is the pure awareness that never goes. Everything is happening in the space of our awareness and enlightenment, which I would say is the true capacity of every human being, is to on the one hand, be observing, be witnessing all of this endless and always changing, phenomenal display of life. So it's like one foot in the relative world, trying to make a difference..

(01:00:15):

..and one foot in the absolute witnessing all of this. That's the final important part, because the end of the day is we are all going to die, but I do not see that consciousness ever ends. So the process finally

leading up to death is to be established in that pure awareness, which never changes, as the body goes away.

Kirkland Newman (01:00:38):

Completely. It's fascinating. One of the things which is really interesting when you talk about consciousness and awareness is you have to be in a state in order to be able to get to that point. So if you take care of your physical needs and your chemical needs, and if you feel safe - if you've dealt with your trauma and your fear - then you're in a state where you can, in Maslow's hierarchy of needs, you can graduate and you can go to the more spiritual side. Some people will say, 'Well, actually, you need to go via the spiritual side, and then everything else will sort itself out.' But I always feel that actually, it's easier, just as with addicts, if you deal with the biochemical imbalances, and you deal with the psycho-spiritual imbalances, and then it's easier to achieve transcendence.

Patrick Holford (01:01:22):

And that is what Maslow was saying in his hierarchy of needs. If you're feeling extremely unsafe, and you don't have the basic things you need to live, it's very hard to completely.. I think if there was a final word of advice I'd give somebody who wakes up feeling depressed, I would just say - do you know Laurel Mellon's book, *Wired For Joy*. There's a very nice concept there. Basically, she talks about five states, the ultimate one we're moving to is joy. We are wired, we have to work very hard to be in a negative state, we expend a lot of energy every morning uploading all our negativities..

(01:02:00):

..to be in a negative state. it's much easier to be in a joyful state, not actually in terms of energy.. but the point that she makes is that if you are in that freaked out, depressed state, you will not be able to do mindfulness. You probably will not be able to sit down and read *Optimum Nutrition for the Mind*. So she says, in the first state of freak-out, there are only three things to remember. One is don't judge, because you judge yourself like crazy and other people. The second is to minimize damage, don't throw the plate, don't say, 'Right, I'm getting a divorce.' The third is, it will pass.

(01:02:45):

That's probably all you can do. Like in the heart math technique, just to breathe into the heart, just remember to breathe, and to breathe into the heart space. That's probably all you can do. But that can shift you from level five to level four. Maybe we'd add on that and make sure you eat breakfast. So your blood sugar is okay, and take your omega-3. That might drop you to another level, when you could then maybe do mindfulness, read a book, or do something else. Different steps with different stages. That's what I learned in *The Stress Cure*, just a few little things can take somebody from down here to here, and then they can move to here and so on. I honestly think there is ultimately no need for some psychiatric drugs.



(01:03:30):

If we were doing the right nutrition with the right psychotherapy, some of the drugs might be purely good as a holding drug when someone's totally freaked out. But they're not part of any long term treatment. There's no need for all that. That's what I really hope that this nutritional medicine will become mainstream psychiatry, in my lifetime.

Kirkland Newman (01:03:52):

Well, I think that we're heading in that direction. I think nutritional psychiatry is really taking off. In fact, when I was preparing this interview with you, I was looking at all the naysayers of nutritional psychiatry molecular psychiatry, and all the references that they use are pre-2000, or in the very early 2000s. I just think, how can they justify this anymore? Because the research has now really advanced and is catching up. I think, more and more, these Wikipedia pages, which are edited by these sort of naysayers saying, 'Oh, this is BS'..

(01:04:30):

..but the scientific evidence that they're using is very outdated. I think that's very exciting. That's fantastic. I just had two more very quick questions. One was about the antioxidants. So you mentioned C, what are the other two or three that you would recommend for mental health? I'm sure A, E.. but maybe tell us a little bit about that. The other thing is there's a lot about mental health being a disease of disconnection. I'm very interested in your book, *The Chemistry of Connection*. How do you think that really impacts the whole mental health debate? One is a biochemical question. The other is more of a philosophical question.

Patrick Holford (01:05:15):

In the antioxidant area, antioxidants are also anti-inflammatory. So there's a lot of talk about depression, for example, and dementia being an inflammatory condition. Right now with COVID, we know that what more people die from is not the virus, they actually die from the cytokine storm, which is the body's inflammatory reaction against dead virus particles.. So inflammation, we know that vitamin C is both an antioxidant and anti-inflammatory. If you look at the chemistry of vitamin C, which is the most potent antioxidant of all because it's got two spare electrons that can do double antioxidant effects, and then is reloaded.

(01:06:00):

If you look at the chemistry of that, it then depends on glutathione, which is also an acetylcysteine. It then depends on a whole pathway that has zinc and selenium in it. Another pathway that has niacin B3 three in it. Another one has thiamine B1 in it. Another one, a very critical one actually, has alpha lipoic acid. So if I could only pick three, I would go vitamin C, glutathione, and alpha lipoic acid. I would rather

in a way, take an all-round antioxidant supplement and eat an all-round antioxidant rich diet. But the only one that we really, really need to supplement, always, no question is vitamin C.

(01:06:45):

Simply because we have lost the ability to make vitamin C. Primates have lost the ability to make vitamin C. So have bats and so have guinea pigs. But dogs and cats and rats don't. So in order to get the amount of vitamin C that is consistent with our healthy biology nowadays, we either do what a gorilla does, which is eat four and a half grams a day. And the gram is 20 oranges. Or we supplement. So vitamin C is very interesting in relation to depression, schizophrenia and other such things. There's no harm in having more, the worst that can happen is you get loose bowels. So then you take down some. So antioxidants are key. On the question of connection..

Kirkland Newman (01:07:32):

I think before you go there, sorry, I'm being.. I'm going to squeeze one more in, which is about minerals. I mean, we haven't spoken about zinc and magnesium, which I think are fundamental for mental health. So can you tell us a little bit about what your three top.. or maybe it's..

Patrick Holford (01:07:48):

My three top minerals, straightaway, I would say zinc, magnesium and chromium. The story I was going to tell you on chromium was of a guy who had many years of psychoanalysis from a wonderful professor of psychoanalysis and Chapel Hill University in Carolina. One day he comes in to see his wonderful psychoanalyst, a man called Professor Malcolm McCloy. He says 'I'm better. I've been taking these pills from health.' It turned out that the pills had a few things that could have had an effect. And the psychoanalyst, being a man of science, said 'Stop taking them. Every week I'm going to give you an envelope..

(01:08:30):

..and I want you to take what's in the envelope and report back. But the long story was that chromium stopped his depression. He ran a double blind controlled trial on chromium high dose 600 micrograms, that's three chromium pills. It's incredibly effective for what we call atypical depression, which is depression that's associated with people who could sleep a lot, who crave carbs.. It's a certain pattern. So chromium can work. Zinc is vital, as zinc is, in fact, my first wonderful teacher, Dr. Carl Pfeiffer is the man - he had a girl who came to see him called Lisa, who was schizophrenic, but her parents worked out that they could keep her sane with an oyster a day. As long as she had an oyster every day..

(01:09:15):

..she was sane. They worked out that it was the zinc in the oyster that kept her sane. So zinc is incredibly important. It was one of the very first campaigns I ran was getting zinc on the map. The other one that's terribly important is magnesium, which is in greens and nuts and seeds, but many of us don't get enough. So those three minerals are a vital part of the equation for good mental health.

Kirkland Newman (01:09:39):

How much zinc would you recommend?

Patrick Holford (01:09:40):

Probably 15 milligrams of zinc is enough.

Kirkland Newman (01:09:46):

Magnesium?

Patrick Holford (01:09:47):

It depends quite a lot on what you eat and how stressed you are. I would say if anyone has any mental health issue, I would supplement 300 milligrams of magnesium, possibly even up to 500 milligrams. If you take too much magnesium, you get loose bowels again.

Kirkland Newman (01:10:03):

Chromium regulates appetite. Do you know why it's effective with depression?

Patrick Holford (01:10:11):

No. You're quite right that chromium sort of works on insulin reception, but there's this big link between appetite, sugar craving, serotonin, and insulin. So it's probably in that territory. It probably influences serotonin. The drug that most rapidly raises serotonin, for about six hours, is MDMA. It's not available on the National Health Service. Ecstasy. One of the effects of it is you don't wee, so it kills carb cravings

instantly. So there's this big link. What we find is when people have chromium, in people who have mood disorders..

(01:10:50):

..there's less PMS, less bingeing, and better mood. So chromosomes are very important. Once again, when the body is out of balance, it needs a lot more of something to bring it back into balance than it does to maintain it.

Kirkland Newman (01:11:03):

Understood. My final question is, is this connection. You talked a lot about the chemistry of connection, how vital connection is, and there is a theory that Johann Hari, for instance, talks a lot about, lost connections in our societies, and how that's a big driver of mental illness.

Patrick Holford (01:11:25):

I really enjoyed his book on connections. But I did feel hard done by, because he takes this very dialectic stance, which is not about chemistry, because he wants to, in a way, diss the drugs. I think that was wrong. There's a massive role of chemistry. So that was a big piece missing from that book. Otherwise, a very good book, if you understand he knows nothing about nutrition.

(01:12:00):

Connections is really a fascinating area. I think that it's all very well doing all these lovely nutritional things so we have a nice life, but we have to think deeply about what life is all about. What is it that makes humans humans? I remember, even back in the 70s, when I was studying psychology, I'd say, 'when are we going to do anything on love?' And they said, 'don't be silly, we're a scientific organisation!' And I'd say, 'But we're psychologists, and are you trying to tell me that love has got nothing to do with the psychology of human beings? I love the statement by Rupert Spira, who's one of the advocates of Advaita.

(01:12:45):

..a very nice philosophy, from the Indian tradition, who says that 'Love is the proof that consciousness is shared.' Love is the proof that consciousness is shared. And there's a lovely illustration of this, if you haven't seen it, which is a TV program called *Octopus, My Teacher*.

Kirkland Newman (01:13:03):

I loved it. I watched it last night.

Patrick Holford (01:13:04)

Basically, this octopus and this man, they make a connection. That's what 'love is the proof that consciousness is shared.' That's kind of what *The Chemistry of Connection* is about, making that connection. If you nourish your brain in the right way, you are more able to do that. But the biggest, the biggest, in a way, problem we've got in our culture, of atheism and science-ism is that we're losing that understanding of connection. Of course, the atheists tell us that nothing existed until the Big Bang when everything came into existence. And the religious tell us that God created everything out of nothing, so at least they agree on something!

Kirkland Newman (01:13:55):

I like that. That's a very good one. But the love point is very interesting. From a biochemical point of view, oxytocin, which is the love hormone, the bonding hormone, is fundamental for mental health and they're talking more and more about the importance of oxytocin is one of our mental health hormones to promote happiness and joy and to dampen down cortisol.

Patrick Holford (01:14:18):

In a way love is what we need. The great Gerald Jampolsky said in his book, love is letting go of fear. I saw a t-shirt the other day, and it said, 'everything you want is the other side of fear'.

Kirkland Newman(01:14:33):

Love that. Beautiful. Well, Patrick, I must say I could talk to you all day. You're brilliant. You're fascinating, and you're full of phenomenal information. I just want to thank you so much for sharing your time with us today, and your knowledge. I really hope that people have been able to take some very concrete things away for their mental health in the show notes. I'll have a lot more detail. But thank you so much for your time, Patrick, and keep up the amazing work. You're changing so many lives. Thank you.

Patrick Holford (01:15:02):

## The MindHealth360 Show - Patrick Holford

My pleasure. Stay healthy, stay free.

Kirkland Newman (01:15:06):

Thank you so much for listening to the MindHealth360 Show. I hope that we've helped you realize that your mental health symptoms have root causes that can and need to be addressed in order to sustainably heal, and have given you some ideas about steps you may take to start your healing journey. Please share this interview with anyone you think may find it helpful. If you want further information, please go to [www.mindhealth360.com](http://www.mindhealth360.com), or check us out on social media. This information is for educational purposes only and is not intended to diagnose or treat any disease or to replace medical advice. Please always consult your healthcare practitioner before discontinuing any medication or implementing any changes in your diet, lifestyle or supplement program. Thank you.